Chapter 5: Mitigation

This chapter provides a summary of environmental commitments for the Build Alternative. These include proposed mitigation measures, commitments made to resource agencies, and required permits. Although UDOT standards are not specified in this chapter, it should be noted that the mitigation strategies that follow are strategies that were previously identified in this environmental assessment (EA), are above and beyond expected requirements, and do not preclude UDOT standards.

Community Character and Cohesion

Access to driveways of homes and businesses will be maintained during construction.

Relocations

For the 13 relocations, the substantial number of new real estate developments in northern Utah County will provide for new homes for those people being relocated. UDOT's Relocation Assistance Program (RAP) will be available to all those who wish to use its services. In accordance with the U.S. Civil Rights Act of 1964, this relocation program administers all its services and benefits to displaced people without taking into consideration race, color, national origin, or sex.

UDOT is committed to finding last resort housing if sufficient replacement housing is unavailable. This can include increasing the payment as outlined by statute, remodeling, refurbishing, or building housing on comparable property, or providing loans for additional purchases if necessary.

UDOT will negotiate with property owners who may be interested in relocating to ensure that the property owners' needs are met and that they are satisfied with the outcome of their relocation.

Business impacts should be minimal; however, the project will provide maximum accessibility to businesses along SR-92 during the course of construction to minimize the negative impacts associated with decreased consumer access.

Public Services and Utilities

Due to the potential impacts to public facilities and services during the construction of the Preferred Alternative, recommended mitigation measures include the following:

- Coordinate directly with the utility companies if utility shut-offs or relocations are required; see Table 5-1 for more detail.
- Through the use of websites, mailings, meetings, and/or signage, notify the public, police and fire departments, and school districts of intersection and road construction. Contact information can be found in Table 5-1. Provide notification of alternate routes at least one week prior to lane closures or access restrictions.

Table 5-1: Contact Information for Fire, Police, Public Utilities, and Schools Within Project Area

Agency	Contact Name	Number
Lehi Fire Department	Chief Dale Ekins Captain Ricky Evans	(801)768-7130
Lehi Police Department	Chief Chad Smith	(801) 766-5800
Lone Peak Fire Department	Chief Craig Carlisle Deputy Chief Brad Freeman	(801) 763-5365
Lone Peak Police Department	Chief Donald Botkin	(801) 756-9800
American Fork Police Department	Chief Lance M Call	(801) 763-3020
Alpine School District	Superintendent Vernon M. Henshaw	(801) 756-8400
Questar Gas	Director Carl Galbraith, Manager Brad Markus	(801) 324-3300
Alpine City Engineering	Shane L. Sorenson	(801) 763-9862
Lehi Power Department	Rod Olsen	(801) 768-4833
Lehi Water Department	Lee Barnes	(801) 768-7102 x 2
Highland Public Works	haylie@highlandcity.org	(801) 756-5751 x 115
Cedar Hills Public Works	Director David Bunker	(801) 785-9668 x 202
U.S. Bureau of Reclamation, Metropolitan Water District of Salt Lake and Sandy (MWDSLS), Central Utah Water Conservancy District (CUWCD), Jordan Valley Water Conservancy District (JVWCD)	Kerry Schwartz	(801) 379-1150

Recreational Resources

The Cedar Hills Golf Course's golf cart path, the Highland Boulevard Trail, and the Bonneville Shoreline Trail will be realigned. The width and character of each will be re-established, and connectivity will be maintained, as described in Table 4-6. All impacts will be temporary in nature, and a temporary detour will be developed so that access can be maintained during construction.

The Preferred Alternative proposes grade-separated crossings at the Bonneville Shoreline Trail, the Dry Creek Parkway, and the Highland Boulevard Trail, as discussed in Section 3.5 and shown on Figure 3-12.

Economics

To off-set the negative, direct impacts associated with business disruptions during the time of construction, potential mitigation measures include the following:

- Using project websites, variable message signs, mailers, and door-to-door visits, provide the public with information on construction updates. Provide notification of alternate routes at least one week before any lane closures or access restrictions.
- Implement the maintenance-of-traffic plan to ensure traffic flow and safety. This may include the use of barriers, temporary traffic signals, temporary crosswalks, and pedestrian signals as well as limiting construction activities during peak-hour travel times.
- Ensure business accessibility by providing up-to-date construction information to business owners, signing changes in access, controlling dust and debris, and scheduling utility interruptions outside of normal business hours.

Pedestrian and Bicycle Considerations

Under the Preferred Alternative, the following bicycle and pedestrian facilities will be constructed:

- A ten-foot wide trail in a 29-foot landscaped strip on the south side of SR-92 between 6400 West and SR-74.
- A five-foot sidewalk in a 29-foot landscaped strip on the north side of SR-92 between 6400 West and SR-74.
- A ten-foot wide trail on the south side of SR-92 between SR-74 and SR-146.
- A five-foot wide sidewalk on the north side of SR-92 between SR-74 and SR-146.
- A ten-foot wide trail between I-15 and Traverse B connecting the Provo Reservoir Canal Trail to I-15.
- An eight-foot wide, shared-use shoulder for cyclists, parking, and/or disabled vehicles along the entire length of the project.
- Grade-separated trail crossings at the Highland Boulevard Trail, Dry Creek Parkway, and the Bonneville Shoreline Trail.
- Future trail accommodations for the Historic Utah Southern Rail Trail.

These crossings will provide improved connectivity and access for pedestrians and bicyclists along SR-92.

The Preferred Alternative will accommodate both northbound and southbound surface street access to trails. For signalized intersection design, considerations will be made to offset the potential safety concerns associated with the wider right-of-way width. These design options may include painting crosswalks to designate pedestrian spaces at intersections, providing pedestrian signals and countdown timers, and installing audible signals. Where express lanes merge with SR-92, advisory signs will be placed to notify motorists of the presence of cyclists.

During construction, access to the existing SR-92 bicycle and pedestrian facilities will be maintained as much as possible.

Water Resources

The following mitigation measures will be implemented for water resources:

- For impacts to the American Fork River and Dry Creek, UDOT will obtain a CWA Section 404 permit from USACE and a state stream alteration permit from the Utah Division of Water Rights (DWRi).
- Both the Dry Creek arch structure and the multi-use trail across the American Fork River will span the ordinary high water mark (OHWM).
- A CWA Section 404 permit will also be obtained for impacts to man-made canals and ditches if USACE determines that they are jurisdictional and that a permit is required.
- Water bodies temporarily impacted by construction-related activities will be restored to their pre-disturbance condition.
- Permanent impacts to water bodies will be mitigated in accordance with CWA Section 404 and state stream alteration rules. Mitigation for temporary erosion during construction is discussed in the Water Quality section below. A summary of required permits and approvals required for construction is found in Table 5-2.

Floodplains

A floodplain encroachment permit will be obtained from Utah County for the following improvements:

- Replacement of the existing culvert at Dry Creek
- Replacement of the existing culvert for the American Fork River crossing
- Placement of bridge abutments for the new multi-use trail bridge crossing of the American Fork River
- Any other incidental floodplain encroachments that may result from road widening

Also, a state stream alteration permit will be obtained from DWRi for impacts to the American Fork River and Dry Creek, as discussed above.

Water Quality

Mitigation Measures for Impacts to Surface Water Quality

The conceptual drainage design is shown in Figure 3-22 and summarized in Table 3-26. Drainage for the Preferred Alternative will be designed for the ten-year storm event to ensure the following:

- Runoff from SR-92 pavement will be collected and treated in a vegetated swale, detention basin, retention basin, or dry well. Note that there may be small, isolated locations where collection and treatment is not practical—for example, bridge decks in sag locations.
- There will be no increase in peak flows from SR-92 pavement discharging to surface waters.
- No runoff from SR-92 pavement will enter the Provo Reservoir Canal prior to or after canal enclosure.
- Existing off-site drainage patterns will be maintained across SR-92. Existing culvert crossings carrying water from the north side of the road to the south will be accommodated.

Additionally, best management practices (BMPs) will be implemented as part of the Preferred Alternative to mitigate impacts to surface waters:

- Plan elements for permanent stormwater runoff control and treatment will be submitted to DWQ.
- The contractor will not use any fill material that may leach organic chemicals (e.g., discarded asphalt) or nutrients (e.g., phosphate rock) into the receiving water.

Mitigation Measures for Impacts to Groundwater Quality

BMPs will also be implemented as part of the Preferred Alternative to mitigate impacts to groundwater:

- No dry wells will be constructed in Drinking Water Source Protection (DWSP) Zones 1 or 2, as shown in Figure 3-21.
- Underground injection control (UIC) inventory forms for stormwater dry wells will be filed with UIC coordinator at DWQ prior to construction.
- If a well is impacted, UDOT will purchase the water right or the lands associated with the water right or will replace the well. If a well needs to be abandoned, it will be abandoned by a licensed individual in accordance with UAC 655-4-12.

Mitigation Measures for Temporary Construction Impacts to Water Quality

Mitigation for temporary construction impacts will be addressed through UPDES permit requirements and through the use of BMPs:

- Contractor will obtain coverage under the UPDES Storm Water General Permit for Construction Activities.
- An erosion control plan and SWPPP will be developed and incorporated into construction documents. Plans will specifically address the protection of surface waters, including Dry Creek, the American Fork River, the Provo Reservoir Canal, and various agricultural ditches, such as Bull River, Lehi, American Fork, Pleasant Grove, Wynn).
- If necessary, contractor will obtain coverage under the UPDES General Permit for Construction Dewatering.
- Existing vegetation will be protected by preventing disturbance beyond specified construction limits.
- BMPs for erosion control will be used where appropriate to keep sediment laden runoff from leaving the construction site.
- Disturbed areas will be stabilized and revegetated in accordance with UDOT Standard Specifications 02912 Topsoil and 02922 Seed, Turf Seed, and Turf Sod or other landscaping requirements specified by UDOT during the design phase.
- Runoff will be diverted away from exposed soil.
- Where possible, materials and equipment will be staged away from stream banks and located in areas that minimize impacts to existing vegetation.
- The contractor will submit a spill prevention, containment, and counter measure plan (SPCCP), which will include an inspection program for equipment operating near surface water, refueling and maintenance procedures, parking locations for equipment, and preparations for a quick response to accidental spills of petroleum or hazardous substances.
- The contractor will notify DWQ whenever the water turbidity in adjacent surface water is visibly increased.
- SWPPP and SPCCP will meet UDOT requirements. These documents are available to the public. Reclamation or their designee will be provided a copy of SWPPP and SPCCP upon request.

Table 5-2 describes the likely water quality permits and approvals necessary for implementation of the Preferred Alternative.

Wildlife

The Migratory Bird Treaty Act (MBTA) regulations apply to construction activities in habitats that could be potentially occupied by migratory birds. Whenever practicable, construction activities for the clearing and grubbing of undeveloped land will be scheduled for the non-nesting season, which occurs September 1 to April 1, to avoid impacts to nesting birds. If clearing and grubbing must occur during the nesting season, a pre-construction survey of potential migratory bird habitats will be done by a qualified biologist to verify the absence of nesting birds. If clearing and grubbing begins prior to the nesting season, it will continue without prolonged breaks as a measure to avoid habitation by migratory birds until after the work is completed. The Dry Creek box culvert will be removed during the non-nesting season, which occurs September 1 to April 1, to avoid impacts to nesting cliff swallows. Any potential taking of a migratory bird will be coordinated with the USFWS in accordance with the MBTA.

Improvements of the Dry Creek and American Fork River road crossings will require a federal CWA Section 404 permit, a state stream alteration permit, and/or a county floodplain encroachment permit. Impacts to terrestrial and aquatic wildlife will be fully mitigated in accordance to the requirements that will be specified in these permits.

Wildlife advisory signs will be provided between I-15 and Dry Creek to address migrating mule deer.

Invasive Species

In accordance with regulations for invasive species, the landscaping and erosion control activities associated with the project will not use species listed as noxious weeds and will be free of invasive weed seed and plant parts.

In addition, recommendations made by the Utah County weed coordinator will be considered during construction of the project. These recommendations include the following:

- Topsoil will remain at and be used on the job site to prevent transfer of invasive weed seed and plant parts outside of the SR-92 study area.
- Construction vehicles and machinery will be inspected and cleaned, as necessary, to prevent transfer of invasive weed seed and plant parts in and out of the SR-92 study area.

Historic, Archaeological, and Paleontological Resources

Efforts to avoid or minimize impacts to historic properties were incorporated into the Preferred Alternative. As a result of the avoidance and minimization measures incorporated into the design, all historic properties present along the project corridor would either not be impacted or would be subject to limited impacts, which warrant a finding of no adverse effect under the NHPA Section 106 process. As such, no mitigation other than the avoidance and minimization measures is necessary. A detailed list of the historic homes and features in the area and the limited impacts that have been preliminarily approved are listed in Table 3-40 and in Chapter 4. In addition the contractor will comply with SHPO's final finding of effect (FOE) for this project, which is included in Appendix C.

The following design measures were applied independently or in combination with each other to minimize impacts to historic homes:

- Widening the roadway to the north
- Reducing the park strip width from 4.5 feet to 3.5 feet
- Reducing the median turn lane from 14 feet to 12 feet
- Reducing lane widths from 12 feet to 11 feet

Other design measures can be considered provided that impacts are not increased.

Questar has discussed the possibility for gas line improvements in the Highland area within the vicinity of the historic homes. Easements have been identified in this document for utilities. If Questar's improvements go outside the designated easements, they are responsible for their own environmental clearances.

Implementing the Preferred Alternative could potentially result in the discovery of previously unidentified, subsurface cultural resources. For this reason, UDOT's Standard Specification 01355 Environmental Protection applies to the SR-92 project.

Hazardous Waste

If petroleum hydrocarbons or other previously unidentified hazardous materials are encountered during construction, appropriate characterization and handling of the soil/waste will be required. During construction, the contractor will be required to comply with UDOT Standard Specification 01355 Environmental Protection. This specification provides guidance to follow in the event that hazardous materials are discovered or generated during construction activities.

Visual Quality

Mitigation measures will include protecting existing vegetation and trees as possible. These measures will include preventing disturbance beyond construction limits, stabilizing and revegetating slopes in accordance with UDOT standards, and rounding slopes to blend new cuts into the existing grade.

Incorporating UDOT's context sensitive solutions (CSS) into the design phase of this process will help minimize visual impacts. This will be done through close coordination with local entities, as defined by UDOT during the design phase, on design preferences and aesthetic treatments within the budget for the project. Efforts will include revegetating the corridor; incorporating Highland City's Parkway Detail into the design; and using appropriate lighting.

Table 5-2: Table of Permits and Approvals

Agency	Permit/Approval Required	Description
USACE	CWA Section 404 Permit	Applicants must demonstrate that the discharge of dredged or fill material would not significantly degrade the nation's waters, and there are no practicable alternatives less damaging to the aquatic environment Jason Gipson, (801)295-8380 x 14, jason.a.gipson@usace.army.mil
DWQ	Approval required	Plan elements for permanent storm water runoff and treatment submitted. Harry Campbell, (801)538-6923, hcampbell@utah.gov
DWQ	Section 402 UPDES Storm Water General Permit	Development of stormwater pollution prevention plan (SWPPP) and temporary erosion control plan required during design phase. Filing of notice of intent (NOI) required prior to construction. http://www.waterquality.utah.gov/UPDES/updes_f.htm
DWQ	Section 402 UPDES General Permit for Construction Dewatering	May be required if there are any dewatering activities during construction. http://www.waterquality.utah.gov/UPDES/updes_f.htm
DWQ	Underground Injection Control Inventory	UIC inventory forms for stormwater dry wells, which can be found at http://www.waterquality.utah.gov/UIC/UICInvInf/UtahUICInvInfFrms.htm, must be filed with UIC coordinator prior to use.
Reclamation/Provo River Water Users Association (PRWUA)	Review/approval required for Impacts to the Provo Reservoir Canal	Required if work is proposed within right-of-way or easement. Coordinate with Reclamation and PRWUA during design to develop strategies. Provide Reclamation and PRWUA two weeks to review, comment, or approve right-of-way plans and plans to protect-in-place or relocate facility. Reclamation and PRWUA have indicated that no retaining walls can be located within the Provo Reservoir Canal easement. Kerry Schwartz, (801) 379-1150,kschwartz@uc.usbr.gov
Reclamation	Review/approval required for Impacts to the Jordan Aqueduct	Required if work is proposed within right-of-way or easement. Coordinate with Reclamation during design to develop strategies. Provide Reclamation two weeks to review, comment, or approve right-of-way plans and plans to protect-in-place or relocate facility. Reclamation and PRWUA have indicated that no retaining walls can be located within the Jordan Aqueduct easement. Kerry Schwartz, (801) 379-1150, kschwartz@uc.usbr.gov
MWDSLS	Review/approval required for Impacts to Salt Lake Aqueduct	Required if work is proposed within right-of-way or easement. Coordinate with MWDSLS during design to develop strategies. Provide MWDSLS two weeks to review, comment, or approve right-of-way plans and plans to protect-in-place or relocate facility. Kerry Schwartz, (801) 379-1150, kschwartz@uc.usbr.gov

Agency	Permit/Approval Required	Description
CUWCD	Review/approval required for Impacts to Alpine Aqueduct	Required if work is proposed within right-of-way or easement. Coordinate with CUWCD during design to develop strategies. Provide CUWCD two weeks to review, comment, or approve right-of-way plans and plans to protect-in-place or relocate facility. Kerry Schwartz, (801) 379-1150, kschwartz@uc.usbr.gov